



#### CASE STUDY SUMMARY

Enhanced automation systems reduce PETCO's lighting and HVAC energy use and costs during peak periods.

- Participant:  
PETCO
- Building Type:  
Retail Chain
- Number of  
Participating Stores  
in California:  
135
- Project Cost:  
\$1,119,000
- Project Incentive:  
\$795,000
- Curtailable Peak  
Load capability:  
5.3 MW
- Primary Benefit:  
Enhanced automation  
system monitors  
temperature for three  
uses: demand  
response, energy  
saving, and pet safety



**In 2001, PETCO had 150 stores with enhanced automation systems as a result of working with the California Energy Commission. Today, they have installed enhanced controls in almost all 750 PETCO stores nationwide.**

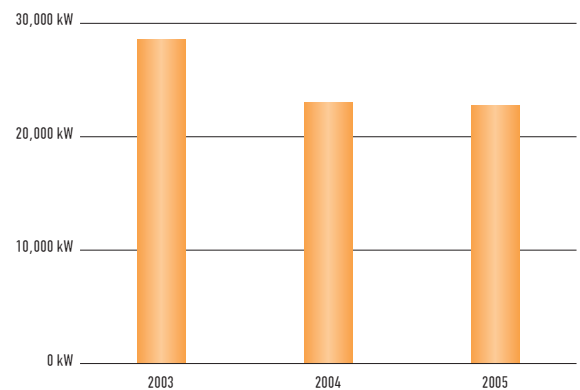
**P**ETCO found that enhanced automation systems help produce a better environment for the stores, customers, and pets. In addition to using demand response systems to save energy and participate in load curtailment programs, PETCO has applied them to monitor and ensure pet safety.

- High energy bills
- System monitoring requires significant capital investment

## PROBLEM

When Tim Speller came to PETCO in 2001, the company was interested in pursuing energy management, but there were two challenges: First, PETCO stores are large and need ample lighting and powerful HVAC systems to maintain a bright and inviting environment; and, second, valuable enhanced automation systems require more than interest – they require capital. With millions of dollars in energy bills, Tim knew that it would require an investment to save money. Tim applied for California Energy Commission project grants to supplement PETCO's investment in enhanced automation controls for stores in California.

## PETCO has curtailed nearly 20% of peak load in only three years



*The above graph shows PETCO's peak load energy reduction as a result of implementing enhanced automation systems. PETCO reduced peak load demand by 20% in only three years and took advantage of California Energy Commission incentives to curtail 5,300 kW at a cost of only \$65 per kW. By shedding 5,300 kW of peak load, PETCO reduced monthly energy costs by over \$65,000*

- Installed energy management control systems
- Controlled energy consumption during peak periods
- Reduced costs with incentives

## SOLUTION

PETCO partnered with San Diego-based Pentech Solutions and Ohio-based Novar Controls to install energy management control systems (EMCS) that could, on command, reduce energy consumption during peak periods. PETCO deployed EMCS controls at over 130 retail locations in less than 90 days, capturing California Energy Commission incentive funding to complement PETCO's own energy management budget.

In addition to participating in demand response programs, PETCO used the EMCS to identify opportunities and take further energy efficiency actions.

*"We have capitalized on the temperature monitoring feature of our enhanced automation system to utilize it as a state-of-the-art pet safety system. The ability to maintain pet safety adds unquantifiable value to our energy savings."*

*"PETCO is committed to a goal of reducing energy consumption for our stores by 50 percent. We have found so many successes that we are now doing an energy showcase in a new southern California store with low energy consumption and demand." Tim Speller, PETCO National Energy Manager*





- Reduced demand through lighting and HVAC controls
- Energy savings from EMCS information
- Temperature monitoring for pet safety

## BENEFITS

PETCO reduced 2004 total energy demand by over 5,300 kW and monthly energy costs by nearly \$65,000. According to an evaluation of 26 PETCO stores, gross energy savings averaged 7 percent for the stores that installed energy management systems.

PETCO has subsequently taken the enhanced automation systems beyond demand response and energy savings. The new ECMS system has also been customized to perform as a pet safety system, monitoring temperature in all animal habitats. This not only brings more value to the system, but also ensures 24 hour-a-day pet safety.

Twenty additional stores, three headquarters buildings, and one distribution center have been added to PETCO's demand control group in California, equipped with the improved Site Controls System. PETCO is committed to a goal of reducing store energy consumption by 50 percent. In a new showcase store, they are utilizing an improved lighting demand control system, more efficient HVAC equipment, photovoltaics, day-lighting, and further upgrades to the Site Controls ECMS.

## PROJECT SITE DESCRIPTION

- Location:  
135 stores in California
- Average Store Size:  
15,000 ft<sup>2</sup>
- Space Function:  
Sales
- Site Contact:  
Tim Speller, National Energy Manager

## Equipment Installed

- Novar Controls Energy Management Control System
- Savoy Corporate Energy Monitoring software
- Cannon Relay System
- Ethernet Communications System

## Energy Usage

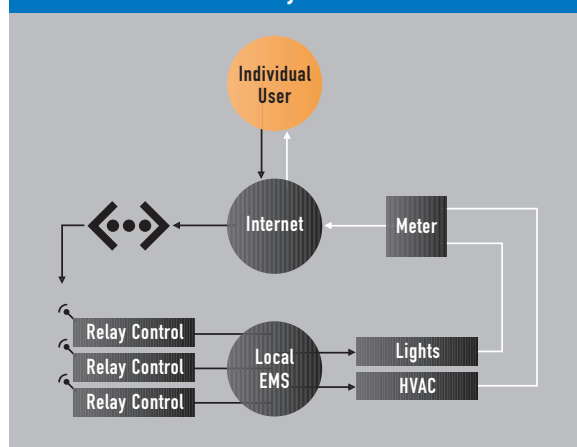
- Summer peak demand: 28.5 MW
- Curtailable peak load: 5.3 MW
- Project cost: \$1,119,000
- Project incentives: \$795,000



# Technical Information

**P**ETCO is able to curtail over 18 percent of its total electric load by using enhanced automation technology to strategically adjust store lighting and HVAC systems. PETCO installed Novar Controls energy management control systems (EMCS) in 135 California stores and is now able to send curtailment signals from a centralized Web server. The system allows PETCO energy managers to monitor and manage individual store energy trends or multiple location aggregates, revealing curtailment and efficiency opportunities. As a result, PETCO has cut monthly energy costs by roughly \$65,000 and curtailed 5,300 kW of the 28,500 kW peak load in California.

**Schematic of PETCO's System**



PETCO's enhanced automation system relies on an Ethernet control system that acts as an intermediary between corporate energy monitoring software and relay control devices at each store. From a remote Internet location, PETCO energy managers can set up pre-programmed or unique curtailment signals based on time of day, energy prices, and/or specific statewide curtailment events. During a curtailment event, the

Web-enabled software activates an Ethernet system, which communicates with individual stores via relay controls. The relay controls then interface with the Novar Controls energy management systems to shed lighting and HVAC loads. Multiple curtailment levels are set up to progressively lower lighting intensity and HVAC load as energy prices increase during peak periods.

PETCO has demonstrated that small-to-medium sized retail locations (less than 200 kW) can successfully utilize enhanced automation technology without negatively impacting customers' shopping experiences. In fact, the energy management system provides temperature monitoring – integral to pet safety in the stores. Through participation in a California Energy Commission demand response program, PETCO received incentives that covered over 70 percent of the total costs for enhanced automation equipment (\$795,000 of \$1,119,000). As a result, PETCO's costs to reduce energy consumption were roughly \$60 per kW.

For more information about PETCO's EMS system, visit:

- <http://site-controls.com/>
- <http://www.lennoxcommercial.com/>

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## TAKING THE NEXT STEP

A list of certified demand response contractors is available at:  
[www.energy.ca.gov/demandresponse/documents/qualified\\_firms.html](http://www.energy.ca.gov/demandresponse/documents/qualified_firms.html)

Free resources are available from the California Energy Commission at:  
[www.energy.ca.gov/enhancedautomation/](http://www.energy.ca.gov/enhancedautomation/)

■ **Business Case Guidebook**

■ **Technical Options Guidebook**

■ **Case Studies**

- 1 Alameda County
- 2 Hewlett-Packard
- 3 Comerica Building
- 4 Foothill-De Anza Community Colleges
- 5 Staples, Inc.
- 6 Doubletree Hotel Sacramento
- 7 Albertsons
- 8 Arden Realty/next>edge
- 9 Contra Costa County
- 10 Hilton, Palm Springs
- 11 PETCO
- 12 Swinerton Inc.

**Research on Demand Response:**

■ <http://drcc.lbl.gov/drcc-1.html>

**Additional Resources:**

■ [www.fypower.org/now/demand\\_resp.html](http://www.fypower.org/now/demand_resp.html)

■ [www.sdge.com/business/dr/index.shtml](http://www.sdge.com/business/dr/index.shtml)

■ [www.pge.com/biz/demand\\_response/](http://www.pge.com/biz/demand_response/)

■ [www.sce.com/RebatesandSavings/LargeBusiness/DemandResponse/](http://www.sce.com/RebatesandSavings/LargeBusiness/DemandResponse/)